

# Informational Summary Report of Serious or Near Serious CAL FIRE Injuries, Illnesses and Accidents



# GREEN SHEET

## Shelter Deployment with Burn Injury

July 20, 2020

Gold Incident

20-CA-LMU-003917

20-CA-LMU-003927

California Northern Region



## SUMMARY

On July 20, 2020, a local government fire engine, under the supervision of a CAL FIRE initial attack Division Supervisor, was engaged in structure defense at the head of a vegetation fire. Fire conditions intensified and the engine company was ordered to retreat to safety. While vacating their position, the fire engine was disabled by radiant heat and direct flame impingement. The crew of the fire engine, consisting of a Chief Officer and one Firefighter, exited the engine and deployed their fire shelters. The Chief Officer suffered second degree burns while inside the engine and the Firefighter was treated for smoke inhalation.

A Board of Review has not approved this Informational Summary Report. It is intended to enhance safety and training, aid in preventing future occurrences, and to inform interested parties. Because the report is published in a short time frame, the information contained herein is subject to revision as further investigation is conducted and/or additional information is developed.

## CONDITIONS

**Weather:** No red flag warnings or fire weather watches were in effect at the time of the incident.

**Temperature:** 87° Fahrenheit

**Relative Humidity:** 16%

**Winds:** Northwest 8 mph / Gusts to 16 mph

**Visibility:** Clear

**Fuel Type:** Fuel Model 122 (GS2), Moderate Load Grass Shrub, 165 (TU5), Very High Load Timber Understory.

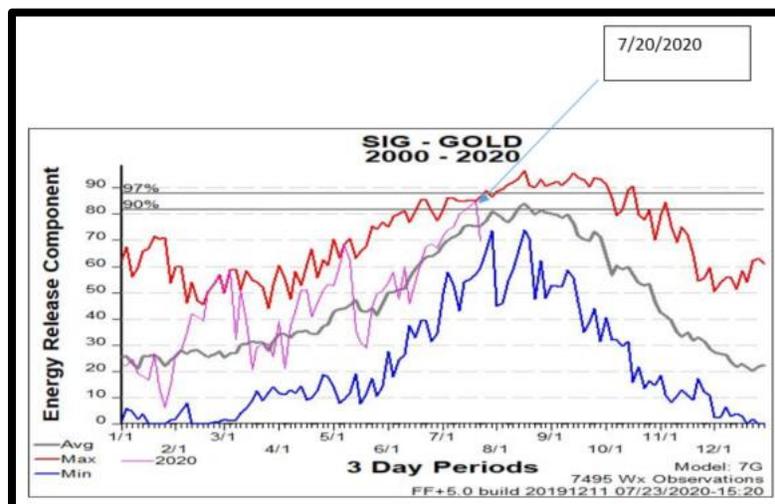
**Road Conditions:** Engine final location: Dirt road with a slight grade.  
Driveway to Upper House: Gravel and dirt road with 40% slope and multiple water bars.

**Make/Model of Equipment:** 2004 HME – Central States/Rosenbauer, Type 1 4x4 engine with 750-gallon tank.

**Topography:** Saddle above a large bowl with prominent ridges and multiple drainages.

**Fire Behavior:** Moderate to dangerous rate of spread with spotting. Direction of fire spread was primarily driven by wind and topography. Flame lengths were 8-10 feet in ground fuels, with some single and group tree torching. Flame lengths were 70-100 feet in crown fuels, with sustained crown fire. The probability of ignition was 100%.

### Burning Index



## SEQUENCE OF EVENTS

On July 20, 2020, the CAL FIRE Lassen Modoc Unit was in extreme draw down of available resources for initial attack due to a large Incident in the southern part of the Unit. This draw down caused extensive response times for resources.

At 12:16 PM, a CAL FIRE Battalion Chief (BC1) observed smoke in the area of Highway 139 and County Road A-2, a few miles south of the community of Adin in Lassen County. BC1 radioed Susanville Interagency Emergency Command Center (SIFC).

At 12:18 PM, SIFC dispatched fire resources to a vegetation fire at the intersection of Highway 139 and County Road A-2.

At 12:22 PM, BC1 arrived at scene and reported two fires approximately two miles apart. BC1 assumed command and established "Gold IC" (IC). BC1 placed an additional resource request based on the developing fire activity of the two fires.

At 12:28 PM, The IC reported the first fire was three to four acres with a dangerous rate of spread in grass, shrub, juniper, and timber.

At 12:30 PM, a CAL FIRE Type 3 fire engine (E1) arrived at scene with a CAL FIRE Fire Apparatus Engineer (FAE1) and was assigned as Division Supervisor of Division A (DIVS A). E1 initiated a hose lay on the left flank of the fire.

At 12:32 PM, the IC reported the second fire had a moderate rate of spread on the east side of Highway 139.

At 12:35 PM, a CAL FIRE Type 2 helicopter (COP1) arrived at scene and reported the fires to be approximately ten acres.

At 12:52 PM, Air Attack (AA1) arrived over the fire.



*Photo 1: Aerial photo of fire behavior during initial attack.*

A CAL FIRE Fire Captain (FC1) arrived at scene in a utility pick-up (U1) and was assigned as Division Supervisor of Division G (DIVS G).

At 12:55 PM, a CAL FIRE Type 3 Engine (E2) arrived at scene with a Fire Captain (FC2) and was assigned to the hose lay on DIV A.

At 1:08 PM, a CAL FIRE Type 3 Engine (E3) with a Fire Captain (FC3) arrived at scene and was assigned to structure triage in the Butte Creek Subdivision within DIV A.

At 1:23 PM, the IC reported the first fire was at 25 acres and the second fire was 10-15 acres.

Due to the distance and topography the IC had poor communication between the two fires on the two assigned tactical frequencies.

The IC observed sustained runs through the timber with spotting.

E3 notified DIVS A, the fire had crested the ridge and structures were threatened.



*Photo 2 taken near Green Cabin by E4 personnel prior to assignment.*

The IC reassigned FC1 as DIVS A in place of FAE1. The priorities were fire suppression, coordinating evacuation efforts with Lassen County Sheriff Deputies, and structure defense.

At 2:58 PM a Local Government Type 1 4X4 fire engine (E4) arrived at scene, staffed with a Chief Officer (C4) and Firefighter (FF4) and were assigned to structure defense in Division A.

At 3:14 PM, a CAL FIRE Division Chief (D1) arrived at scene and began reconnaissance.

E3 identified three structures, the “Upper House”, “Green Cabin” and “Log Cabin”. E3 evaluated the Upper House as defensible containing a temporary refuge area (TRA). FC3 saw the fire was coming from two directions, the north and west. A US Forest Service water tender (WT1) arrived at the Upper House while E3 was triaging. E3 left to triage the Green Cabin.

At 3:25 PM, AA1 projected both fires would end up merging together within the next half hour.

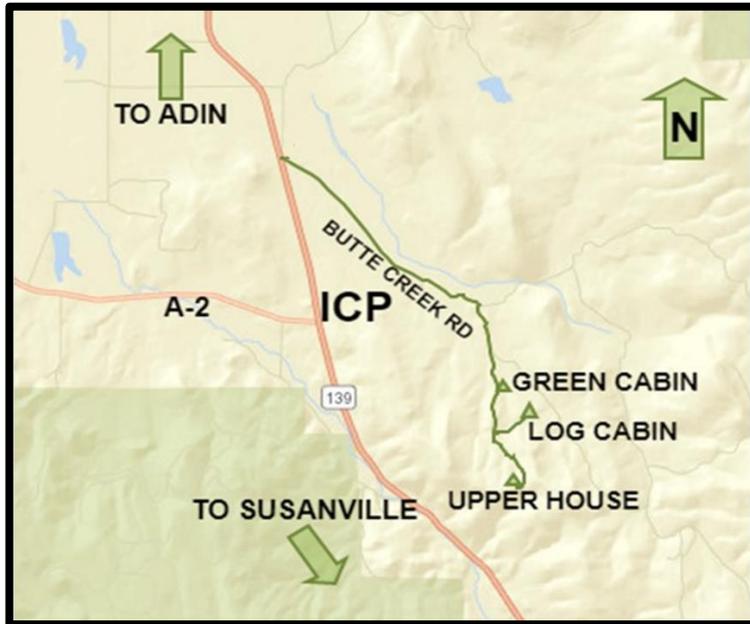
While at the Green Cabin, E3 met with E4 and discussed structure defense for the Upper House.

FC2 joined DIVS A in his utility on Lower Butte Creek Road, leaving E2 on

lower Butte Creek Road.

DIVS A arrived at the Green Cabin and briefly spoke with E3 and E4.

At approximately 3:40 PM, E4 traveled to the Upper House and E3 traveled to triage the Log Cabin. DIVS A followed E4 up to the Upper House.



At approximately 3:52 PM, E4 arrived at the Upper House and began assessing structure defense.

At 3:53 PM, DIVS A arrived at the Upper House and reassigned WT1 to the heel of the fire for a pumping operation.

E3 arrived at the Log Cabin to scout and size up the property.

Fire activity intensified at the Upper House and a spot fire was observed. E4 deployed a 150' 1-1/2" hoseline to attack the spot fire.

At approximately 3:56 PM, DIVS A called IC on the radio for permission to initiate defensive firing around the Upper House.

E3 overheard the radio traffic from DIVS A, recognized the fire behavior was intensifying and decided to travel back towards the "Y" between the Upper House and the Log Cabin.

*Video Clip 1 – [Upper House](#)*

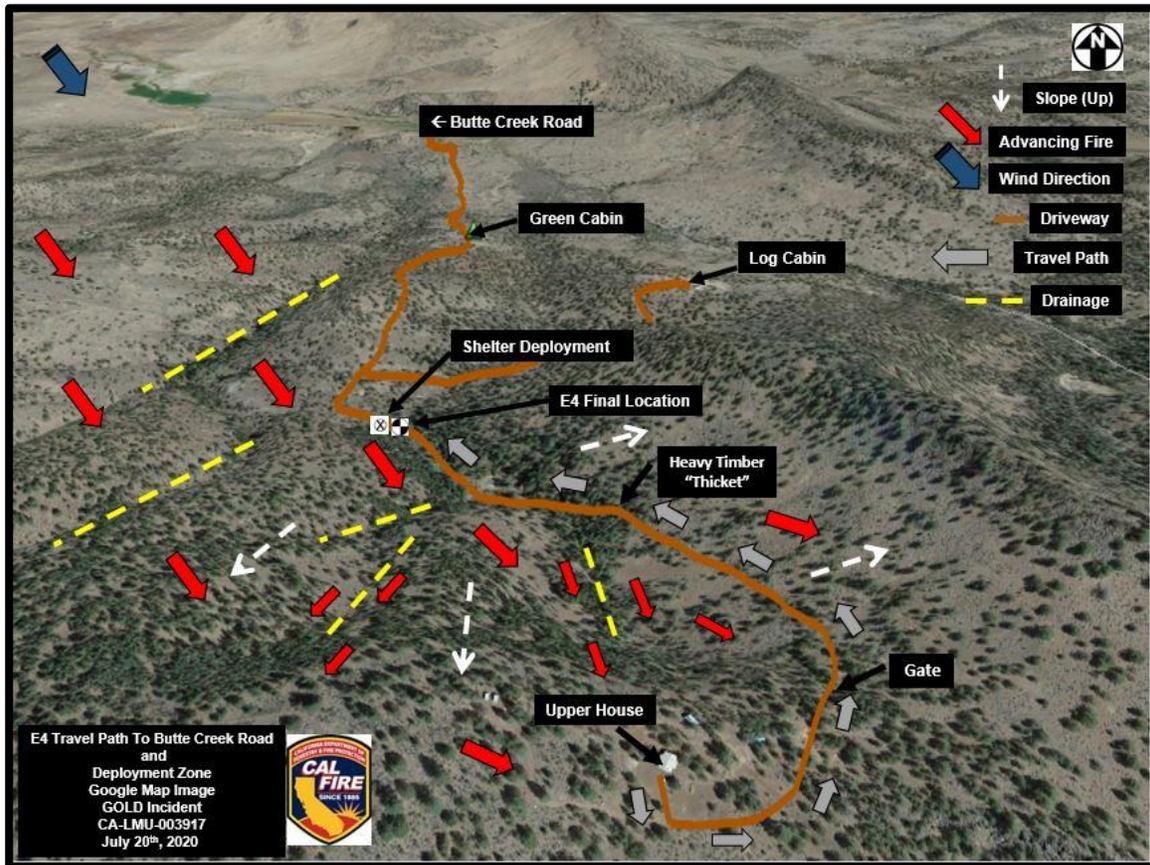


*Photo #3 Aerial of Upper House.*

At 3:58 PM, the column crested the Upper House with multiple spot fires, DIVS A directed E4 to withdraw. (No defensive firing was done)

At 3:59 PM, DIVS A left the Upper House and observed spots on both sides of the road below the gate.

At 4:02 PM, E3 approached the "Y" intersection between the Upper House and the Log Cabin. E3 observed the fire had spotted across the roadway on the east side just above the "Y". E3 observed WT1 drive past the "Y" intersection and followed WT1 towards the Green Cabin.



After securing their equipment, E4 left the Upper House. As E4 passed through the gate, they observed fire on both sides of the road. E4 had to slow to negotiate the first few water bars on the way down the steep narrow road.

*Video Clip 2 - [Leaving Upper House, past gate.](#)*

*Video Clip 3 - [Down the drive.](#)*

As E4 approached the "Thicket" (heavy timber) C4 considered turning around and observed fire behavior alongside and behind the engine. Based on the narrow, steep road with no turnarounds, C4 determined the only option was to proceed through the heavy timber.

At 4:05 PM, DIVS A arrived at the Green Cabin without E4.

With limited visibility, E4 navigated a water bar as FF4 shouted out "TREE!" E4 swerved to the left causing the engine to drive off the road clipping a culvert. With the aid of four-wheel drive, E4 reentered the roadway.

*Video Clip 4 - [Off the road clip culvert.](#)*

Due to low visibility, E4 veered off the roadway to the left following a false turn. E4 backed-up, re-entered the roadway and continued while experiencing

heavy black smoke and extreme heat.

*Video Clip 5 - [Wrong turn](#)*

E4 drove through the extreme heat of the flaming front causing the windshield to fracture. The windshield wiper blades and tires caught on fire, as the air brake “low-air” alarm began to sound.

C4 experienced extreme heat through driver’s window that resulted in 2<sup>nd</sup> degree burns to the left side of face and left eye (contact worn was compromised).

C4 suffered 2<sup>nd</sup> degree burns on the left forearm after making contact with the driver’s side door.

E4 entered the black, experiencing reduced heat and thick smoke.

Due to the loss of air pressure from melted air lines, E4 came to a stop on a slight incline. C4 and FF4 decided to exit the cab and deployed their fire shelters.



*Photo #4 Final resting spot of E4.*

*Video Clip 6 - [Flame Front](#)*

The deployment site selected was in front of the engine, side-by-side, in the ruts of the road. C4 and FF4 had to enter shelters from kneeling low as the wind was too strong to deploy standing.



Photo #5 Deployment site.

At 4:07 PM, C4 radioed over the tactical frequency:

***“If anyone can hear us, we need help up here bad.”***

C4’s transmission was garbled to units on the tactical frequency.

DIVS A called AA1 and requested tanker drops for an “engine taking heat.”

C4 put his portable radio outside of the fire shelter and used his lapel mic to transmit “two fire shelters deployed and two injured”.

DIVS A called AA1 and relayed they “have a fire shelter deployment.”

Due to AA1 not having the tactical frequency selected, Charlie 3 (Aerial Supervision Module, ASM) dropped to low level looking for C4. Charlie 3 made two passes and made contact with C4 on the tactical frequency. C4 said they were on Butte Creek Road and said he heard Charlie 3 fly by. Charlie 3 contacted COP1 to help search the area. Charlie 3 asked C4 to let them know when they heard COP1.

D1 attempted to contact E4 and experienced too much radio traffic on DIV A tactical frequency.

D1 cleared the tactical frequency and made positive contact with C4, stating, “I’m coming in to get you”.

At 4:20 PM, the IC notified SIFC there was a shelter deployment with injuries. The IC ordered ground and air ambulances.

FF4 suffered heavy smoke inhalation while deployed inside the standard size fire shelter.

At approximately 4:25 PM, D1 proceeded up the Butte Creek Road towards E4.

D1 noted fire behavior was more extreme than normal in this fuel type.

C4 and FF4 emerged from their fire shelters as D1 approached them. D1 evaluated C4 and FF4 for injuries and loaded them into the vehicle.

At 4:36 PM, D1 passed the Green Cabin.

At 4:43 PM, D1 arrived at Hwy 139 and Butte Creek Road.

At 4:47 PM, both patients were transported by ground ambulance to a local helispot and then by air ambulance to Mercy Medical Center in Redding. C4 was later flown to the U.C. Davis Burn Center in Sacramento.

Video Clip 7,8 and 9 - [Deployment Site](#)

## INJURIES/DAMAGES

- C4 suffered second degree burns to the left side of his face, left eye and left arm while driving through flame front.
- FF4 was treated for smoke inhalation.
- E4 sustained major heat damage.

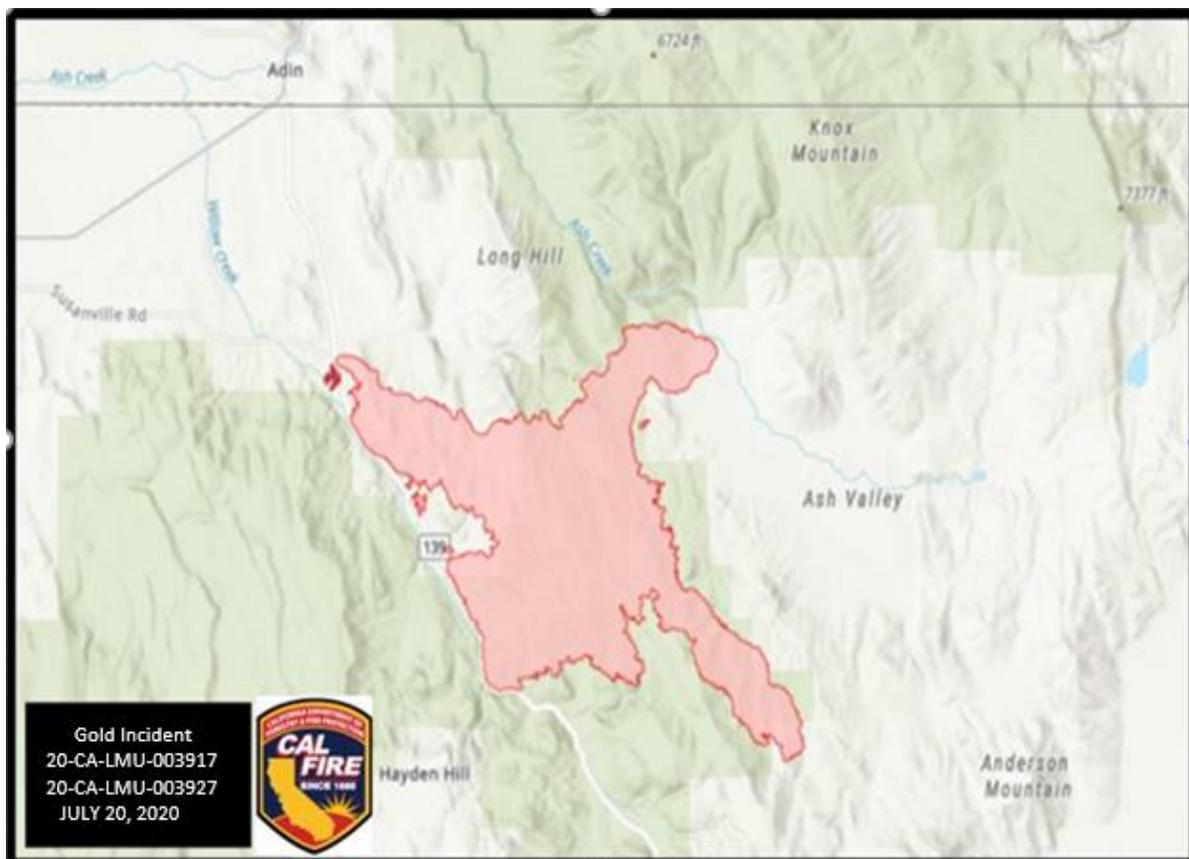
## SAFETY ISSUES FOR REVIEW

- Identify escape routes and safety zones. Ensure there is ample travel time.
- Evaluate the benefits and hazards of using a structure as a Temporary Refuge Area (TRA).
- Evaluate the benefits and hazards of using a vehicle as a TRA.
- Recognize the transition when the fuel, weather, and topography align for increased fire potential.
- Keep the resources involved in the IWI on the assigned channel and switch all other assigned resources to a secondary channel.
- Consider proper resource utilization during draw down.

## INCIDENTAL ISSUES/LESSONS LEARNED

- LCES
- 10 Standard Fire Orders
  - Identify escape routes and safety zones and make them known.
  - Base all actions on current and expected behavior of the fire.
  - Know what your fire is doing at all times.
  - Maintain prompt communications with your crew, supervisor, and adjoining forces.
- 18 Situations "That Shout Watch Out"
  - Unburned fuel between you and the fire.
  - Terrain and fuel make escape route to safety zone difficult.
- Common Denominators of Fire Behavior on Tragedy and Near-Miss Fires
  - Fire responds to topographical features and runs uphill.
  - Critical burn period between 1400 and 1700.
- Wrap all exposed electrical and air lines with protective fire lagging material.
- Carry correct size Fire Shelter. Larger size: >6'1" in height, or >53" in girth.  
(<https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf05512325/pdf05512325dpi72.pdf>)

## PHOTOS/SITE DIAGRAMS/MAPS



*Map – Gold Incident location.*